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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/767,875

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EXAMINER

WALKER, KEITH D

ART UNIT

PAPER NUMBER

1795

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/767,875	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> KEITH WALKER	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10 and 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claims 10 & 12 are pending examination as discussed below.

#### ***Claim Interpretation***

Based on the arguments of 6/30/10, the battery charging is not part of the final claimed product by a means of measuring the amount of gas generated, which is a property of the final product.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 10 & 12 rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a negative electrode with a particular amount of binder and carbonaceous material, does not reasonably provide enablement for any amount of binder and carbonaceous material. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The claimed invention is drawn to a negative electrode for a lithium battery that has a particular amount of CO and H<sub>2</sub> gas generation during charging. As disclosed by the instant specification (pg. 4), the amount of gas generated is related to the decomposition of the atmosphere and cellulose binder. The amount of carbonaceous material used in the negative electrode

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would determine the size of the electrode and determine the amount of binder required. Since the amount of binder is related to the amount of gas generated, the amount of binder is critical to determining the amount of gas generated. The examples provided in the instant specification only illustrate using 96g of carbonaceous material with either 2g each of carboxymethyl cellulose and styrene-butadiene rubber or 1g each of the two binders. The instant disclosure does not provide instruction for how to make the claimed battery with the claimed gas generation for any size battery comprising any amount of binder.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10 & 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The meets and bounds of the claimed product for each of claim 10 & 12 are unclear and therefore the claims are indefinite. The claimed products are directed to a negative electrode and a lithium battery, respectively.

However, an amount of gas generation that is produced by a charging process is also claimed for each of the two products. It is unclear if the charging is a required limitation of the final product so that the final product is a charged lithium battery or if the charging process is a means of evaluating the negative electrode product and therefore not actually part of the claimed product.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10 & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0152835 (Dasgupta) in view of US 5,753,387 (Takami).

Dasgupta teaches a rechargeable lithium battery with a negative electrode consisting essentially of a carbonaceous active material and an aqueous binder of polyvinylidene fluoride (PVDF) (Abstract, 0023, 0030, 0031). A positive electrode and separator are used to complete the lithium battery.

Dasgupta is silent to the binder comprising a mixture of carboxymethyl cellulose and styrene-butadiene rubber.

Takami discloses a rechargeable lithium battery with a negative electrode consisting essentially of a carbonaceous active material and an aqueous binder mixture consisting essentially of carboxymethyl cellulose and styrene-butadiene rubber (8:45-65, 17:49-55). PVDF and carboxymethyl cellulose and styrene-butadiene rubber are taught as being equivalent binders that are well known in the art. As illustrated by Takami, it would be obvious to one skilled in the art to use carboxymethyl cellulose and styrene-butadiene rubber as a substitute for the PVDF as taught by Dasgupta. Choosing and using equivalent materials well known in the art for their intended purposes is obvious to one skilled in the art. Combining prior art elements according to

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known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

Since the negative electrode and battery are made with similar materials, in similar amounts and by similar vacuum drying methods, the amount of gas generated as claimed will inherently be the same for the same unclaimed charging characteristics.

### ***Response to Arguments***

The 112 1<sup>st</sup> rejection for enablement is withdrawn due to the amendments.

Regarding the 112 2<sup>nd</sup> rejections over claims 10 and 12 individually, these rejections are withdrawn due to the charging processes being disclosed by the instant specification.

Applicant's arguments filed 6/30/10 have been fully considered but they are not persuasive.

Regarding the 112 1<sup>st</sup> rejection, scope of enablement, applicant argues the claims are enabled since at least one method of making the claimed invention is disclosed and bears reasonable correlation to the entire scope of the claim. However, as discussed in the rejection, the examples only provide two data points for the amount of binder and the claims are drawn to a relatively unlimited amount of binder. Also, the instant specification indicates that the amount of binder would have an impact on the gas generation due to the decomposition of the binder. Therefore, it stands that the amount of binder included in the electrode does bear a correlation to the amount of gas

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generated and the claims are not commensurate in scope with the examples provided or the amount of direction provided for making the claimed invention.

Regarding the 112 2<sup>nd</sup> rejection, applicant argues that "the feature discussed by the Examiner is a property of the battery." However, the question presented in the rejection of whether the charging process is a part of the final claimed product or a method of evaluating the final product has not been answered and therefore the rejection stands.

Applicant argues Dasgupta and Takami do not teach the gas generation during charging. However, as discussed in the rejection, the combined teachings of Dasgupta and Takami teach the same electrode and battery elements as claimed and the same vacuum drying process as disclosed in the instant specification and as argued by applicant as important to the making of the electrode and creating the properties of the battery that allow the claimed gas generation.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH WALKER whose telephone number is (571)272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Keith Walker/  
Primary Examiner, Art Unit 1795